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EXAMINER	
PATHAK, SUDHANSHU C	

ART UNIT	PAPER NUMBER
2634	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/729,694	YANG ET AL.	
	Examiner	Art Unit	
	Sudhanshu C. Pathak	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *January 26th, 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-21 and 26-29* is/are pending in the application.

4a) Of the above claim(s) *1-15 and 22-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-21 and 26-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *March 26th, 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-15 & 22-25 have been canceled.

2. Claims 16-21 & 26-29 are pending in the application.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 16-19, 26 & 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webb et al. (4,485,486) in view of Schulz (6,611,511) in further view of Shen et al. (5,952,963).

Regarding to Claim 16 & 29, Webb discloses performing a hand-off of a mobile station in a cellular system that includes a smart antenna system of plural sector antennas (Abstract, lines 1-4, 19-27 & Fig. 1-2 & Column 1, lines 25-40 & Column 4, lines 48-62) comprising recording signal strengths received at one or more of the plural sector antennas from the mobile station (Abstract, lines 19-27 & Column 5, lines 9-13); monitoring the signal strength changes (degradations) from the recorded signal strengths (Abstract, lines 19-27, Column 2, lines 57-68 & Column 5, lines 9-20 & Fig. 3a, elements 402-418 & Column 8, lines 12-68); assessing the movement of the mobile station based on the monitored signal strengths (Column 5, lines 9-44 & Fig. 3a-d & Column 2, lines 57-68); determining when the signal strength received at one antenna from the mobile station reach a pre-determined threshold and further

performing hand-off of the mobile station when reaching of a predetermined threshold is so determined (Fig. 3a-d & Column 2, lines 57-68 & Column 5, lines 9-44 & Column 8, lines 12-68). However, Webb does not explicitly disclose selecting the hand-off controlled in response to the assessment of the movement of the mobile station based on the calculated rates of signal changes.

Schulz discloses selecting hand-off by the mobile station by assessing the movement of the mobile station (Column 3, lines 30-50, 61-67 & Column 4, lines 1-21 & Fig. 1). Schulz further discloses implementing the system in a CDMA (spread spectrum) cellular system (Fig. 3 & Column 7, lines 10-23 & Column 1, lines 35-67 & Column 2, lines 1-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Schultz teaches selecting hand-off based on the assessment of the movement of the mobile station and this can be implemented as a criterion for hand-off in any cellular communication system. Furthermore, hand-off is inherently based on the assessment of the movement of the mobile station in any cellular communication system, as the mobile station moves from a different sector or to a different cell and the assessment is based on measuring various system parameters. However, Webb in view of Schulz does not explicitly disclose controlling the hand-off based on the calculated rates of signal changes.

Shen discloses a method and apparatus for selecting an antenna from a diversity of antenna in a wireless communication system (Abstract, lines 1-2 & Column 1, lines 15-35). Shen also discloses implementing the antenna selection based on the

received signal strength indicator (RSSI) (Column 2, lines 22-36 & Column 4, lines 25-42). Shen further discloses implementing the selection criteria based on the gradient error vector wherein the vector represents the magnitude of the received signals rate of change (Abstract, lines 25-28 & Column 4, lines 9-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Shen teaches implementing a selection criteria for selecting an antenna based on the rate of signal changes and this can be implemented in the system as described in Webb in view of Schulz so as to initiate hand-off before the signal quality declines and avoid complete loss of communication.

Regarding to Claim 17, Webb in view of Schulz in further view of Shen discloses a method for performing hand-off of a mobile station in a cellular system wherein selecting handoff controlled in response to the assessment of the movement of the mobile station based on the calculated rates of signal changes as described above. Webb further discloses hand-off comprising a hand-off between two different sector antennas serving two different sectors and a hand-off between two different two adjacent cells (Abstract, lines 19-27 & Column 5, lines 9-23).

Regarding to Claim 18, Webb in view of Schulz in further view of Shen discloses a method for performing hand-off of a mobile station in a cellular system wherein selecting handoff controlled in response to the assessment of the movement of the mobile station based on the calculated rates of signal changes as described above. Webb further discloses assessing the movement includes determining if the rate of change is indicative of tangential motion across an antenna sector or is indicative of

radial motion within an antenna sector (Abstract, lines 19-27 & Column 5, lines 9-23).

Regarding to Claim 19, Webb in view of Schulz in further view of Shen discloses a method for performing hand-off of a mobile station in a cellular system wherein selecting handoff controlled in response to the assessment of the movement of the mobile station based on the calculated rates of signal changes as described above. Webb further discloses a step of determining when the signal strength reaches a predetermined threshold comprising determining when signal strength received at an antenna from the mobile station reach a first predetermined threshold (Fig. 3d, elements 474 & Column 5, lines 9-44 & Column 12, lines 50-65 & Column 13, lines 3-14).

Regarding to Claim 26, Webb discloses a computer readable medium (Fig. 2, elements 358, 362-366, 352-356 & Column 5, lines 45-68 & Column 6, lines 3-19) bearing instructions for controlling plural sector antennas of a smart antenna system (Fig. 3a-d & Fig. 4 & Column 8, lines 12-49) wherein said instructions being arranged to cause one or more processors upon execution to perform steps comprising recording signal strengths received at one or more of the plural sector antennas from the mobile station (Abstract, lines 19-27 & Column 5, lines 9-13); calculating the rates of signal changes from the recorded signal strengths (Abstract, lines 19-27, Column 2, lines 57-68 & Column 5, lines 9-20 & Fig. 3a, elements 402-418 & Column 8, lines 12-68); assessing the movement of the mobile station based on the calculated rates (Column 5, lines 9-44 & Fig. 3a-d & Column 2, lines 57-68);

determining when the signal strength received at one antenna from the mobile station reach a pre-determined threshold and further performing hand-off of the mobile station when reaching of a predetermined threshold is so determined (Fig. 3a-d & Column 2, lines 57-68 & Column 5, lines 9-44 & Column 8, lines 12-68). However, Webb does not explicitly disclose selecting the hand-off controlled in response to the assessment of the movement of the mobile station based on the calculated rates of signal changes.

Schulz discloses selecting hand-off by the mobile station by assessing the movement of the mobile station (Column 3, lines 30-50, 61-67 & Column 4, lines 1-21 & Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Schultz teaches selecting hand-off based on the assessment of the movement of the mobile station and this can be implemented as a criterion for hand-off in any cellular communication system. Furthermore, hand-off is inherently based on the assessment of the movement of the mobile station in any cellular communication system, as the mobile station moves from a different sector or to a different cell and the assessment is based on measuring various system parameters. However, Webb in view of Schulz does not explicitly disclose controlling the hand-off based on the calculated rates of signal changes.

Shen discloses a method and apparatus for selecting an antenna from a diversity of antenna in a wireless communication system (Abstract, lines 1-2 & Column 1, lines 15-35). Shen also discloses implementing the antenna selection based on the received signal strength indicator (RSSI) (Column 2, lines 22-36 & Column 4, lines

25-42). Shen further discloses implementing the selection criteria based on the gradient error vector wherein the vector represents the magnitude of the received signals rate of change (Abstract, lines 25-28 & Column 4, lines 9-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Shen teaches implementing a selection criteria for selecting an antenna based on the rate of signal changes and this can be implemented in the system as described in Webb in view of Schulz so as to initiate hand-off before the signal quality declines and avoid complete loss of communication.

5. Claims 20-21 & 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schulz (6,611,511) in view of Ariyavisitakul et al. (5,794,153).

Regarding to Claim 20, Schulz discloses a method and apparatus for controlling communication between a mobile cellular telephone and a cell of a cellular telephone network (basestation) (Abstract, lines 1-5 & Fig. 1 & Fig. 3). Schulz discloses the cellular telephone network comprising communication sectors and an antenna array at the basestation (Column 3, lines 30-67 & Column 4, lines 1-21 & Fig. 1 & Claims 1-3). Schulz further discloses implementing the smart antenna system in a CDMA (spread spectrum) system (Fig. 2, element 202 & Fig. 3, elements 202, 104 & Column 1, lines 34-67 & Column 2, lines 1-53 & column 5, lines 40-67 & Column 7, lines 10-23). Schulz discloses the sectors to be different regions extending out radially out from the same base station of one geographic cell site (Fig. 1). However, Schulz does not disclose analyzing the measured traffic loads to determine if redistribution of arrangement of the antennas if the traffic load exceeds

a predetermined threshold and if redistribution is performed calculating a balanced arrangement wherein the traffic load in every sector is below the predetermined threshold.

Ariyavisitakul discloses a method for arranging plural sector antennas into plural serving sectors of a cell base station comprising associating with each serving sector a respective first subset of the plural sector antennas (Fig. 1 & Abstract, lines 1-11 & Column 1, lines 23-36, 67-68 & Column 2, lines 1-30); measuring the traffic load in each serving sector (Column 2, lines 1-30 & Column 3, lines 15-30 & Fig. 1 & Fig. 3-4); analyzing the measured traffic load to determine if a redistribution of the arrangement of the sector antennas is necessary (Fig. 1 & Column 1, lines 55-62 & Column 3, lines 15-67 & Column 4, lines 35-67 & Column 6, lines 39-52 & Claim 3); if redistribution is performed calculating a balanced arrangement of antennas within the serving sectors (Abstract, lines 1-11 & Fig. 1-2 & Column 6, lines 39-59 & Column 1, lines 55-62 & Column 3, lines 15-67 & Column 4, lines 35-67 & Column 6, lines 1-40); associating with each sector a respective second subset of plural antennas according to a balanced arrangement wherein at least one respective subset for an associated serving sector differs from the respective first subset serving sector (Fig. 1 & Abstract, lines 1-11 & Column 1, lines 23-36, 67-68 & Column 2, lines 1-30 & Column 6, lines 39-59 & Column 2, lines 16-26). Ariyavisitakul also discloses a maximum traffic capacity (threshold) for a traffic load for each microcell (Column 6, lines 20-32). Ariyavisitakul also discloses the assignment control processor redistributes the traffic loads as the load per microcell

approaches the maximum traffic capacity (Column 6, lines 39-59 & Column 5, lines 45-53 & Column 3, lines 15-30 & Column 1, lines 55-64 & Column 9, lines 5-17). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Ariyavisitakul teaches a method for analyzing the measured traffic loads to determine if redistribution of arrangement of the antennas if the traffic load exceeds a predetermined threshold and if redistribution is performed calculating a balanced balanced arrangement wherein the traffic load in every sector is below the predetermined threshold, and this can be implemented in the communication network as described in Schulz so as to provide accurate estimates of the radio traffic in each sector and to dynamically adjust the load in each sector so as to avoid the loss of communication with a mobile station.

Regarding to Claim 21, Schulz in view of Ariyavisitakul discloses a method for arranging plural sector antennas into plural serving sectors of a cell base station and analyzing the measured traffic loads to determine if redistribution of arrangement of the antennas if the traffic load exceeds a predetermined threshold and if redistribution is performed calculating a balanced arrangement wherein the traffic load in every sector is below the predetermined threshold as described above. Ariyavisitakul further discloses the first arrangement associates the same number of antennas with each serving sector (Fig. 1-2 & Column 1, lines 23-27 & Column 3, lines 15-35 & Column 6, lines 39-53). Ariyavisitakul further discloses calculating a balanced arrangement to include calculating the traffic to be below a predetermined threshold (Column 3, lines 15-35 & Column 6, lines 1-9, 21-33). Ariyavisitakul also

discloses calculating a balanced arrangement to include calculating an arrangement wherein the traffic loads between adjacent sectors is substantially equal (Fig. 1-2 & Column 3, lines 16-35 & Column 6, lines 21-52). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Schulz in view of Ariyavisitakul satisfies the limitations of the claim.

Regarding to Claim 28, Schulz discloses a method and apparatus for controlling communication between a mobile cellular telephone and a cell of a cellular telephone network (basestation) (Abstract, lines 1-5 & Fig. 1 & Fig. 3). Schulz discloses the cellular telephone network comprising communication sectors and an antenna array at the basestation (Column 3, lines 30-67 & Column 4, lines 1-21 & Fig. 1 & Claims 1-3). Schulz further discloses implementing the smart antenna system in a CDMA (spread spectrum) system (Fig. 2, element 202 & Fig. 3, elements 202, 104 & Column 1, lines 34-67 & Column 2, lines 1-53 & column 5, lines 40-67 & Column 7, lines 10-23). Schulz discloses the sectors to be different regions extending out radially out from the same base station of one geographic cell site (Fig. 1). However, Schulz does not disclose analyzing the measured traffic loads to determine if redistribution of arrangement of the antennas if the traffic load exceeds a predetermined threshold and if redistribution is performed calculating a balanced arrangement wherein the traffic load in every sector is below the predetermined threshold.

Ariyavisitakul discloses a computer readable medium (Fig. 2, elements 58, 52 & Column 6, lines 33-39) bearing instructions for arranging plural sector antennas of a

smart antenna system (Fig. 1-4 & Abstract lines 1-11 & Column 2, lines 16-26 & Column 1, lines 55-63 & Column 3, lines 15-45) wherein said instructions being arranged to cause one or more processors upon execution to perform steps comprising of associating with each serving sector a respective first subset of the plural sector antennas (Fig. 1 & Abstract, lines 1-11 & Column 1, lines 23-36, 67-68 & Column 2, lines 1-30); measuring the traffic load in each serving sector (Column 2, lines 1-30 & Column 3, lines 15-30 & Fig. 1 & Fig. 3-4); analyzing the measured traffic load to determine if a redistribution of the arrangement of the sector antennas is necessary (Fig. 1 & Column 1, lines 55-62 & Column 3, lines 15-67 & Column 4, lines 35-67 & Column 6, lines 39-52 & Claim 3); if redistribution is performed calculating a balanced arrangement of antennas within the serving sectors (Abstract, lines 1-11 & Fig. 1-2 & Column 6, lines 39-59 & Column 1, lines 55-62 & Column 3, lines 15-67 & Column 4, lines 35-67 & Column 6, lines 1-40); associating with each sector a respective second subset of plural antennas according to a balanced arrangement wherein at least one respective subset for an associated serving sector differs from the respective first subset serving sector (Fig. 1 & Abstract, lines 1-11 & Column 1, lines 23-36, 67-68 & Column 2, lines 1-30 & Column 6, lines 39-59 & Column 2, lines 16-26). Ariyavisitakul also discloses a maximum traffic capacity (threshold) for a traffic load for each microcell (Column 6, lines 20-32). Ariyavisitakul also discloses the assignment control processor redistributes the traffic loads as the load per microcell approaches the maximum traffic capacity (Column 6, lines 39-59 & Column 5, lines 45-53 & Column 3, lines 15-30 & Column 1, lines 55-64 & Column

9, lines 5-17). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Ariyavisitakul teaches a method for analyzing the measured traffic loads to determine if redistribution of arrangement of the antennas if the traffic load exceeds a predetermined threshold and if redistribution is performed calculating a balanced arrangement wherein the traffic load in every sector is below the predetermined threshold, and this can be implemented in the communication network as described in Schulz so as to provide accurate estimates of the radio traffic in each sector and to dynamically adjust the load in each sector so as to avoid the loss of communication with a mobile station.

6. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Webb et al. (4,485,486) in view of Schulz (6,611,511) in further view of Shen et al. (5,952,963) in further view of Tayloe et al. (5,023,900).

Regarding to Claim 27, Webb discloses a computer readable medium (Fig. 2, elements 358, 362-366, 352-356 & Column 5, lines 45-68 & Column 6, lines 3-19) bearing instructions for controlling plural sector antennas of a smart antenna system (Fig. 3a-d & Fig. 4 & Column 8, lines 12-49) wherein said instructions being arranged to cause one or more processors upon execution to perform steps comprising recording signal strengths received at one or more of the plural sector antennas from the mobile station (Abstract, lines 19-27 & Column 5, lines 9-13); calculating the rates of signal changes from the recorded signal strengths (Abstract, lines 19-27, Column 2, lines 57-68 & Column 5, lines 9-20 & Fig. 3a, elements 402-418 & Column 8, lines 12-68); assessing the movement of the mobile station based

on the calculated rates (Column 5, lines 9-44 & Fig. 3a-d & Column 2, lines 57-68); determining when the signal strength received at one antenna from the mobile station reach a pre-determined threshold and further performing hand-off of the mobile station when reaching of a predetermined threshold is so determined (Fig. 3a-d & Column 2, lines 57-68 & Column 5, lines 9-44 & Column 8, lines 12-68). However, Webb does not explicitly disclose selecting the hand-off controlled in response to the assessment of the movement of the mobile station based on the calculated rates of signal changes and performing location finding of a mobile station with a cell-site signal coverage area.

Schulz discloses selecting hand-off by the mobile station by assessing the movement of the mobile station (Column 3, lines 30-50, 61-67 & Column 4, lines 1-21 & Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Schultz teaches selecting hand-off based on the assessment of the movement of the mobile station and this can be implemented as a criterion for hand-off in any cellular communication system. Furthermore, hand-off is inherently based on the assessment of the movement of the mobile station in any cellular communication system, as the mobile station moves from a different sector or to a different cell and the assessment is based on measuring various system parameters. However, Webb in view of Schulz does not explicitly disclose controlling the hand-off based on the calculated rates of signal changes.

Shen discloses a method and apparatus for selecting an antenna from a diversity of antenna in a wireless communication system (Abstract, lines 1-2 & Column 1,

lines 15-35). Shen also discloses implementing the antenna selection based on the received signal strength indicator (RSSI) (Column 2, lines 22-36 & Column 4, lines 25-42). Shen further discloses implementing the selection criteria based on the gradient error vector wherein the vector represents the magnitude of the received signals rate of change (Abstract, lines 25-28 & Column 4, lines 9-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Shen teaches implementing a selection criteria for selecting an antenna based on the rate of signal changes and this can be implemented in the system as described in Webb in view of Schulz so as to initiate hand-off before the signal quality declines and avoid complete loss of communication. However, Webb in view of Schulz in further view of Shen does not disclose performing location finding of a mobile station with a cell-site signal coverage area and determining the location of the mobile station by comparing the received signal strength from at least one sector antenna against the cell-site signal coverage profile along with its predicted movement.

Tayloe discloses performing location finding of a mobile station in a cellular system that includes a cell-site signal coverage profile (Abstract, lines 1-11, 14-27 & Fig. 1 & Column 5, lines 18-35 & Column 6, lines 1-11 & Fig.'s 2-5). Tayloe also discloses determining the location of the mobile station by comparing the received signal strength from at least one sector antenna against the cell-site signal coverage profile along with its predicted movement (Column 2, lines 38-68 & Column 4, lines 22-51 & Column 5, lines 18-35, 55-67 & Column 6, lines 1-11 & Fig.'s 2-5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Tayloe teaches performing location finding of a mobile station with a cell-site signal coverage area and determining the location of the mobile station by comparing the received signal strength from at least one sector antenna against the cell-site signal coverage profile along with its predicted movement and this can be implemented in the cellular system as described in Webb in view of Schulz in further view of Shen so as to provide the system operator with the information of the mobile unit so as to optimize the coverage of the system during various heavier and or low load traffic conditions.

Response to Arguments

7. Applicant's arguments with respect to claims 16-21 & 26-29 have been considered but are moot in view of the new ground(s) of rejection.
8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing

date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, it is recommended to the applicant to amend all the claims so as to be patentable over the cited prior art of record. A detailed list of pertinent references is included with this Office Action (See Attached "Notice of References Cited" (PTO-892)).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

    - If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)-272-3056
    - The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sudhanshu C. Pathak

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